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Factsheet

RODENT AND DEER CONTROL IN ORCHARDS

(Replaces Factsheet "Rodent and Deer Control in Orchards", October 1979)

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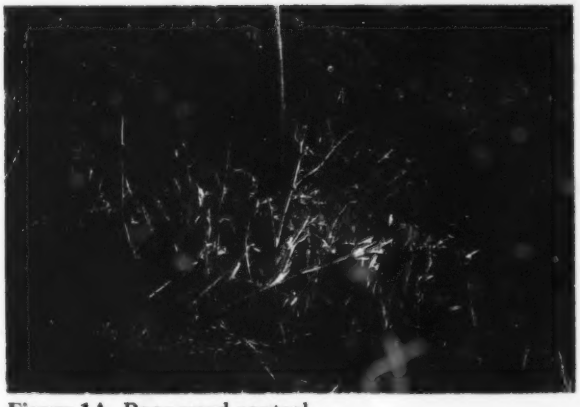

Figure 1A. Poor weed control

Figure 1B. Rodent injury found after weeds removed

Every year voles (mice), groundhogs, rabbits and deer cause significant economic injury in orchards throughout Ontario. Control of these nuisance animals is difficult and requires a long-term control strategy to be effective.

MOUSE (VOLE) CONTROL

Damage due to mice (properly referred to as "voles"), is most serious when their normal food supply is limited. Mouse injury to fruit trees mostly consists of girdling of trunk and roots and sometimes root pruning (Figures 1A and 1B).

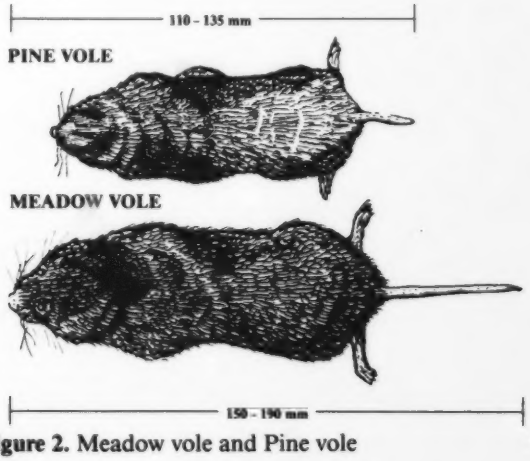

Figure 2. Meadow vole and Pine vole

Identification

The **meadow vole** is the most common mouse in orchards, though in southwestern Ontario the **pine vole** has caused damage (Figure 2). The adult **meadow vole** is about 150 to 195 mm long, dark chestnut brown with gray belly. The tail is about twice as long as its hind foot, and the ears are furred, and projecting slightly above the fur on the head. The eyes are prominent.

The **pine vole** is light brown, a body length of about 110 to 135 mm, and a tail about as long as its hind foot. The eyes are somewhat sunken and the ears are nearly buried in the fur. Fur of the pine vole is less coarse than the meadow vole.

Biology

Meadow voles usually feed on grass seeds, herbs and bulbs during the spring and summer then shifting to bark in the fall and winter. They make shallow runways along the soil surface whereas the pine vole burrows deep and feeds underground mainly on rootlets and the bark stripped from larger roots.

Control

Mice have a tremendous reproductive potential and are most effectively controlled by a season long mouse management approach. They are in the orchard because they can readily obtain the three basics for their survival – food, shelter and minimum predator exposure. By denying

mice these three basics, season-long populations will not flourish.

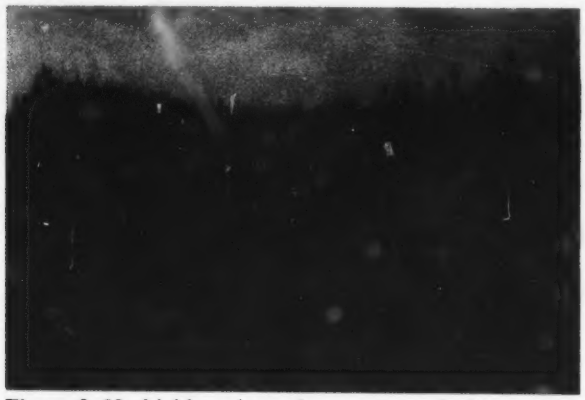

Figure 3. Herbicide strip under tree rows. Sod is mowed regularly between rows.

Cultural Practices

A wide herbicide strip in the tree row or under individual trees coupled with regular close mowing of orchard ground cover helps to discourage mice. The abundance of nesting material and places to hide offered by brush and trash should be avoided. Remove straw, trash, sod, etc. from around the base of the tree for at least 60 cm from the trunk. Predation by the domestic cat, foxes and birds of prey all contribute to a low mouse population.

Figure 4A. Spiral tree guard

Tree Guards For maximum tree protection all newly planted trees should have a guard placed around the trunk. The bottom of the guard should be buried in the soil 5 cm deep, or better yet, in a mound of fine crushed stone or sharp cinders. All tree guards should be checked each fall to see that they are mouse tight, free of trash and are not interfering with root development.

A number of commercial tree guards are available. Two of the most common are spiral plastic and galvanized wire mesh (Figure 4). Grower experience has shown that a guard approximately 45 cm high is adequate. If you are making your own guards do not use dark coloured materials or tar paper. These materials can increase the temperature of the

Figure 4B. Wire mesh tree guard

bark on sunny days in winter and subsequent low temperatures at night can cause injury to the bark tissue. Also, they provide a place for trunk damaging insects to live. Heavy aluminum foil or thin metal sheets should be avoided. Unventilated guards of this type have the potential to damage trees by allowing the trunk to heat. Spiral tree guards should be checked and adjusted annually to prevent the guard from interfering with trunk expansion (growth) (Figure 5).

Figure 5A. Tree outgrowing guard leaving poor protection

Figure 5B. Rodent injury to tree as a result of improper guard selection

Poison Baits At harvest time check for signs of mice in the orchard - fresh grass clippings in runways, tunnels, droppings and chewed apples. Baits are most effective if dropped apples are picked up and removed from the orchard. Before the grass falls over and the ground is covered with snow, broadcast a bait over the floor of the orchard. Baits are best applied on bright days with no rain expected for several days. Several commercial formulations of bait are available for orchard use. Consult the label before application and obey all safety instructions.

Bait Stations The use of bait stations provides a means of achieving a longer period of control of mice than the broadcast treatment. Various materials such as slabs of wood, pieces of board, or tin cans with one end removed can be used for bait stations. The bait is placed under the board, or in the can, with the can lying on its side. The "inverted T" bait station made of 1½ inch ABS pipe is perhaps the most effective type of bait station available. In this station several tablespoons of bait are placed in the neck which is capped, thus, protecting the bait from the elements. Bait stations should be used at a rate of approximately 25 per hectare (10 per acre).

Figure 6. Inverted "T" bait station

CAUTIONS IN HANDLING POISON BAITS These baits are poisonous to human beings, domestic animals and wildlife.

Store the bait in a shed away from children, irresponsible persons and animals. Wear rubber or neoprene gloves for hazardous compounds and wash after handling poison baits. Avoid inhalation of dust or fumes. Destroy empty containers by burning or by burying in non-cropland away from water. Keep children, pets, and domestic animals away from treated areas. Where possible remove mouse bodies and bury or dispose of them in a safe manner.

RABBIT CONROL

Cottontail and jackrabbits can cause damage to fruit trees as their food source becomes scarce in winter months. Although rabbits prefer tender terminal growth and fruit buds, some will resort to girdling the bark off the trunk. Damage to terminal shoots can result in malformation of tree growth while loss of bark may result in tree death or loss of tree vigour and susceptibility to entry by disease organisms. Rabbit populations are cyclic and high populations can develop rapidly making controls important to reduce damage to the orchards.

Rabbit Repellents containing thiram, when properly used, appear to offer reasonable tree protection. There are a number of commercial preparations available some of which mix white latex paint with the thiram. Before using these commercial preparations, or any other materials, consult the label and avoid undue dilution of the product. Be sure to treat the tree as high as rabbits can reach when standing on deep snow. (Figure 7).

Figure 7. Tree painted with latex-thiram mixture in early fall.

The repellents may be applied with a small knapsack sprayer or painted on with a brush. Most growers apply this paint on small trees by putting a wool sock or car wash mitt over a pesticide safe glove and smearing the paint on the tree. Most commercial preparations will not hurt buds. The

white latex paint is a good carrier for thiram and also serves to protect the trees against Southwest Injury. One commonly used mixture consists of: Mixing 400 g of Thiram 75 WP with 2 litres of water and stirring slowly into 4 litres of white exterior latex paint. **Oil based paints are toxic to tree and should not be used.**

Shooting rabbits is an excellent means of keeping the population down. However, it must be done regularly throughout the year because other rabbits soon move into the orchard area. This method by itself cannot be depended upon to provide adequate control.

GROUNDHOGS

Groundhogs or woodchucks are present throughout Ontario and may require control in some cases.

Damage may be serious ranging from bark injury from gnawing, teeth sharpening or tree climbing to root damage caused by burrowing. These burrows may also be a hazard to equipment and people who may inadvertently step into the hole resulting in possible physical injury (i.e. ankle sprains, leg injury, etc.).

Groundhogs hibernate in their burrows during the winter months. They resume activity in March/April with a litter of young (averaging four) born in late April - May. Groundhogs have two or three separate homes, sometimes 100 m or more apart. Each home will have at least two openings - the entrance hole will have a large pile of earth beside it while exit or plunge holes do not have earth around them.

Control

Winter is a poor time for groundhog control, as these pests hibernate in a sealed off chamber in the burrow.

The following are commonly used methods of control: **Phostoxin**, a fumigant, contains aluminum phosphide. In the presence of moisture, phosphide gas (phosphine) is released, which is claimed to be effective against groundhogs. When handling phostoxin, a full face mask repirator with an acid gas canister should be worn and the use of cotton gloves is recommended. A second person with personal protective equipment should be assisting during the fumigation. Always consult the product label. This product is manufactured in tablet form. Rate of application is one tablet per hole. All entrances must be sealed to prevent the gas from escaping.

The distributor of this material, Abell Waco Ltd., requires the user to take instruction on using this product before it can be purchased. (A Factsheet, *Aluminum Phosphide for Groundhog Control*, is available from the Ontario Ministry of Environment.)

Gas Cartridges are cardboard cylinders containing a mixture that burns slowly and asphyxiates the groundhog. The cartridge is placed in the burrow of the groundhog and all entrances must be sealed. Follow manufacturer's instructions on the preparation and use of cartidges.

Trapping can be effective for groundhog control; however, it is time-consuming. The use of No. 2 steel traps (muskrat traps) are most practical. Traps should be checked at least twice a day and should be cleaned after each catch.

Shooting can be an excellent means of keeping groundhogs under control. However, it must be done regularly from spring to fall.

DEER

The incidence of deer damage in Ontario is on the rise. In some areas the problem is uncontrollable. Damage to fruit trees by deer may be the result of too many deer competing for too little food. Deer gernerally confine their feeding to soft tender terminal growth. Sometimes small trees are damaged by antler polishing which occurs in the fall when bucks seek to remove the dried "velvet" covering from their antlers by rubbing against the tree.

Control

Deer Fencing is the most expensive way to exclude deer. Information is available on rigid wire fencing to electric fencing from commercial suppliers. This Factsheet does not have space to include all the options available.

Repellents such as odour and taste repellents are being utilized in some areas. **Odour repellents** such as blood meal, moth flakes, soap (one trade name is Hinder) and human hair have been tried with varying degrees of success. Small nylon mesh bags (cut from old nylons) filled with an egg sized ball of fresh human hair, obtained from a mens barbershop, and replaced every 4 to 6 weeks has worked well. These odour repellent bags are placed in every tree around the perimeter of the orchard or on the side the deer approach from. The protection gained depends on the thoroughness of the treatment and availability of alternate food sources. If other food sources are scarce, repellents may not have the desired effects.

Hunting is only permitted during prescribed dates allowed by the Ministry of Natural Resources. A landowner is **not** allowed to kill deer while defending his property. Check with hunting license issuers, your local Municipality, or local Ministry of Natural Resources offices for deer hunting season dates, and how to obtain permits.

Taste Repellents and Odour Repellents such as soaps and thiram mixtures should be applied before the animals begin feeding. These products produce an objectionable taste or odour which discourages deer from further feeding. Follow all label instructions carefully, as some of these treatments should not be used while edible portions of the crop are present. Some are not registered for use on food. Due to the nature of the products, retreatment after heavy rainfalls may be necessary.

SUMMARY

No single method for rodent and deer control is completely effective. Utilizing season long management techniques, cultural, mechanical and biological should keep damage from these pests to a minimum. Be aware that natural predators such as foxes, snakes, hawks and owls won't exterminate your pests but can help keep numbers down.

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